

1 **Saw Having a Tilttable Base**

2 **Cross Reference**

3 This application is a continuation-in-part of U.S. Application No. 09/921,338 filed on
4 August 2, 2001.

5 **Background of the Invention**

6 **1. Field of the Invention**

7 The present invention relates to a saw having a tilttable base for preventing hanging of a
8 workpiece to be cut.

9 **2. Description of the Related Art**

10 A typical circular saw comprises a base, a clamping device mounted on the base for
11 clamping a workpiece to be cut, a blade holder pivotally mounted to the base, and a blade
12 rotatably held by the blade holder for cutting the workpiece. However, when the workpiece is
13 relatively long, a so-called seesaw effect is incurred, as the workpiece is supported at only one
14 end thereof while the other end of the workpiece is hanging outside the base and bends under the
15 action of gravity. Thus, the end of the workpiece on the base must be clamped with a relatively
16 large force so as to avoid vibrations during cutting that would result in an undesired skew cutting
17 face. The present invention is intended to provide an improved saw to solve the supporting
18 problem for the workpiece.

19 **Summary of the Invention**

20 An object of the present invention is to provide an improved saw having a base that can
21 be adjusted to an appropriate tilt position to allow the end of the workpiece outside the base to be
22 supported by the ground.

23 A saw in accordance with the present invention comprises a base and a supporting
24 member for supporting the base above the ground, with the base pivotally attached to the
25 supporting member. The base comprises a clamping device mounted thereon for supporting an
26 end of a workpiece. The base can be tilted to a position where another end of the workpiece is
27 supported by the ground.

1 Other objects, advantages, and novel features of the invention will become more apparent
2 from the following detailed description when taken in conjunction with the accompanying
3 drawings.

4 **Brief Description of the Drawings**

5 Fig. 1 is a perspective view of a cut-off saw in accordance with the present invention.

6 Fig. 2 is a perspective view, partly exploded, of the cut-off saw in accordance with the
7 present invention.

8 Fig. 3 is a partial sectional view of a portion of the saw in accordance with the present
9 invention.

10 Fig. 4 is a partial side view of the saw in accordance with the present invention, with
11 portions of the saw being removed for ease of illustration.

12 Fig. 5 is a view similar to Fig. 3, illustrating adjustment of the tilt angle of a base of the
13 saw in accordance with the present invention, with portions of the saw being removed for ease of
14 illustration.

15 Fig. 6 is a schematic side view illustrating supporting of a workpiece after adjustment in
16 the tilt angle of the base, with portions of the saw being removed for ease of illustration.

17 Fig. 7 is a perspective view of a circular saw in accordance with the present invention.

18 **Detailed Description of the Preferred Embodiment**

19 Referring to Figs. 1 and 2, a saw in accordance with the present invention of the cut-off
20 type generally comprises a base 10 having a first side 11 and a second side 12 opposite to the
21 first side 11, a clamping device 13 mounted on the base 10 and between the first side 11 and the
22 second side 12 of the base 10, a blade holder 20 pivotally mounted to the second side 12 of the
23 base 10, and a blade 22 rotatably held by the blade holder 20 for cutting a workpiece 70 (Fig. 6)
24 clamped by the clamping device 13. Each of the first side 11 and the second side 12 of the base
25 10 comprises a screw hole 111 in an end thereof and a circular mounting portion 112 on the other
26 end thereof, the mounting portion 112 having a screw hole 113. A motor 21 is mounted to a side

of the blade holder 20 for rotating the blade 22. The blade holder 20 further includes a blade guard 23 for protecting the operator.

A substantially U-shaped supporting member 30 is located on the ground 71 for supporting the base 10 at a level above the ground 71. The supporting member 30 comprises two limbs 32 connected by an intermediate section 31. Each limb 32 extends zigzag and has a first section 321 located above the ground 71 and a second section 33 located on the ground 71. The supporting member 30 surrounds the first side 11, the second side 12, and a third side between the first side 11 and the second side 12 of the base 10.

Two elastic elements 40 are respectively mounted to the first side 11 and the second side 12 of the base 10. Each elastic element 40 comprises a coil portion 43 mounted around an associated one of the mounting portions 112. A first end 41 of each elastic element 40 is attached to a bottom of the base 10, and a second end 42 of each elastic element 40 is attached to the first section 321 of an associated limb 32 of the supporting member 30.

Two fixing members 50 are respectively mounted to the first side 11 and the second side 12 of the base 10. Each fixing member 50 comprises a first end 51 having a hole 511 and a second end 52 in the form of an arcuate hook. A bolt 53 is extended through the hole 511 of the first end 51 of each fixing member 50 and then engaged in the screw hole 113 of the associated mounting portion 112 of the base 10. As illustrated in Fig. 3, each limb 32 of the supporting member 30 is held by the arcuate second end 52 of the associated fixing member 50 to move therewith. Thus, the base 10 may pivot relative to the supporting member 30.

An adjusting device 60 is provided for adjusting the tilt angle of the base 10 relative to the supporting member 30. The adjusting device 60 comprises two guide plates 61 and two locking members 62. Each guide plate 61 includes a first portion having a slot 611 and a second portion 612 in the form of an arcuate hook for holding the second section 33 of the associated limb 32. Each locking member 62 comprises a threaded stem 621 projecting therefrom and extending through the slot 611 of the associated guide plate 61 and then into the screw hole 111 of the associated side 11 or 12 of the base 10.

1 As illustrated in Fig. 4, when the threaded stem 621 of each locking member 62 is located
2 in the upper end of the slot 611 of the associated guide plate 61, the entire base 10 is supported
3 by the supporting member 30 at a level above the ground 71. When a long workpiece 70 (Fig. 6)
4 is to be cut, an upper end of the workpiece 70 is clamped by the clamping device 13 on the base
5 10 while a lower end of the workpiece 70 is initially hung above the ground 71. Referring to Fig.
6 5, for solving the supporting problem for the long workpiece 70, the operator may loosen both
7 locking members 62 to allow pivotal movement of the base 10 relative to the supporting member
8 30. As illustrated in Fig. 5, the slots 611 of the guide plates 61 guide movement of the locking
9 members 62 on the base 10 until the base 10 reaches the desired tilt angle where the lower end of
10 the workpiece 70 touches and is thus supported by the ground 71, best shown in Fig. 6. The
11 locking members 62 are then turned in the opposite direction to press against the guide plates 61.
12 Thus, the locking members 62 are retained in place to thereby retain the base 10 in the desired
13 tilt angle. The elastic elements 40 return the base 10 to a substantially horizontal position parallel
14 to the ground 71 after the locking members 62 are loosened. The slots 611 are preferably arcuate
15 for smooth pivotal movement of the base 10.

16 According to the above description, it is appreciated that the base of the saw in
17 accordance with the present invention can be adjusted to an appropriate tilt angle such that the
18 lower end of the workpiece can be lowered to and thus supported by the ground 71. It is, thus,
19 not necessary to provide a relatively high clamping force for clamping the upper end of the
20 workpiece. The workpiece shall not vibrate during cutting. The structure for adjusting the tilt
21 angle of the base is simple and easy to be mounted onto the base.

22 It should be appreciated that although the above description has been described with
23 reference to a cut-off saw, the base 10 of the present invention can be utilized in a circular saw
24 which could be created such as by utilizing a blade 22' having teeth such as illustrated in Fig. 7.

25 Although the invention has been explained in relation to its preferred embodiment, it is to
26 be understood that many other possible modifications and variations can be made without
27 departing from the scope of the invention as hereinafter claimed.